

What is Claimed is:

1. An anisotropic scattering film comprising a micro-porous film and a substance in micro pores of said micro-porous film, wherein the micro pores observed on the surface of the film are substantially in the form of ellipse, the ratio of the major axis to the minor axis (major axis/minor axis) of said ellipse is over 1, the minor axis size of the micro pores is smaller than the wavelength of light, the directions of micro pores along the major axis are oriented to substantially one direction, the refractive index of the substance in micro pores of the micro-porous film differs from the refractive index of the micro-porous film, and the anisotropic scattering film has scattering anisotropy to a polarizing component of a polarized light.

2. The anisotropic scattering film according to Claim 1, wherein the micro pores of the micro-porous film are filled with a substance having a refractive index different from the refractive index of the micro-porous film.

3. The anisotropic scattering film according to Claim 1 or 2, wherein the micro-porous film is composed of a polymer.

4. The anisotropic scattering film according to any of Claims 1 to 3, wherein the gas permeability of the micro-porous film is 5 to 5,000 sec/100cc·cm<sup>2</sup>.

5. The anisotropic scattering film according to any of Claims 1 to 4, wherein the ratio of the major axis to the minor

axis (major axis/minor axis) is 3 to 30.

6. The anisotropic scattering film according to any of

Claims 1 to 5, obtainable by polymerizing a polymerizable substance filled in the micro pores.

*Sub A*  
*Conc*

7. The anisotropic scattering film according to any of

Claims 1 to 6, wherein the substance in the micro pores is an anisotropic substance.

*Sub B*  
*Conc*

8. The anisotropic scattering film according to Claim

7, wherein the anisotropic substance is oriented to substantially one direction.

9. The anisotropic scattering film according to Claim

7 or 8, wherein

$$0.01 < |n-ne| < 0.6$$

$$0 \leq |n-no| < 0.05$$

in the above formula, n is the refractive index of the micro-porous film, ne and no ( $ne > no$ ) are the refractive index of the anisotropic substance.

10. The anisotropic scattering film according to any of

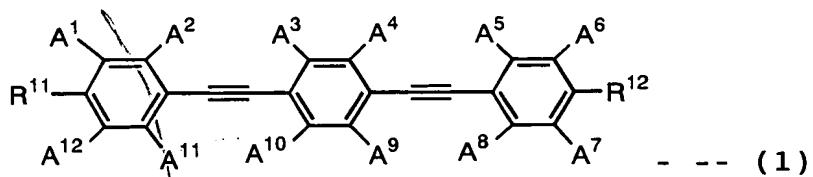
*Sub A*  
*Conc*

Claims 7 to 9, wherein the anisotropic substance is a liquid crystal.

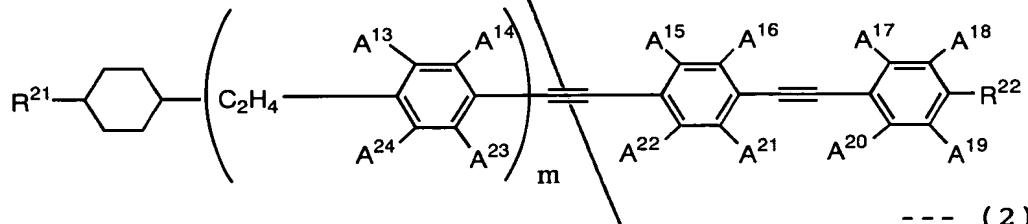
*Sub B*  
*Conc*

11. The anisotropic scattering film according to Claim

10, wherein the liquid crystal includes at least one compound selected from the compounds represented by the formulas (1) to (3):

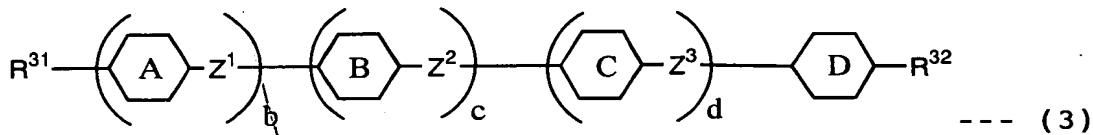


in the formula,  $A^1-A^{12}$  represent, each independently, a hydrogen atom, a fluorine atom, an alkyl group or alkoxy group having 1-10 carbon atoms which may be substituted with fluorine;  $R^{11}$  and  $R^{12}$  represent, each independently, a hydrogen atom, a fluorine atom, a cyano group,  $SF_5$ ,  $NCS$ ,  $4-R^{13}-(cycloalkyl)$  group,  $4-R^{13}-(cycloalkenyl)$  group or  $R^{14}-(O)q^{11}$ ;  $R^{13}$  represents a hydrogen atom, a linear or branched alkyl group having 1-12 carbon atoms which may be substituted with fluorine;  $R^{14}$  represents a linear or branched alkyl group having 1-12 carbon atoms which may be substituted with fluorine; and  $q^{11}$  represents 0 or 1.



in the formula,  $A^{13}-A^{24}$  represent, each independently, a hydrogen atom, a fluorine atom, or an alkyl group having 1-10 carbon atoms;  $m$  is 0 or 1;  $R^{21}$  represents a hydrogen atom, a linear or branched alkyl group having 1-12 carbon atoms which may be substituted with fluorine;  $R^{22}$  represents  $R^{21}$ , a fluorine atom, a cyano group,  $4-R^{23}-(cycloalkyl)$  group,  $4-R^{23}-(cycloalkenyl)$  group or  $R^{24}-(O)q^{21}$ ;  $R^{23}$  represents a hydrogen atom, a linear

or branched alkyl group having 1-12 carbon atoms which may be substituted with fluorine, and  $R^{24}$  represents a linear or branched alkyl group having 1-12 carbon atoms which may be substituted with fluorine; and  $q^{21}$  represents 0 or 1.



in the formula (3), ring A, ring B, ring C and ring D, each independently, represents, 1,4-phenylene, 1,4-cyclohexylene, 1,4-cyclohexelene, 4,1-cyclohexelene, 2,5-cyclohexelene, 5,2-cyclohexelene, 3,6-cyclohexelene, 6,3-cyclohexelene, 2,5-pyrimidinediyl, 5,2-pyrimidinediyl, 2,5-pyridinediyl, 5,2-pyridinediyl, 2,5-dioxanediyl or 5,2-dioxanediyl; hydrogen atoms on ring A, ring B, ring C, and ring D may be substituted with fluorine;  $R^{31}$  and  $R^{32}$  represent a hydrogen atom, a fluorine atom, fluoromethyl group, difluoromethyl group, trifluoromethyl group, fluoromethoxy group, difluoromethoxy group, trifluoro methoxy group, cyano group, an alkyl group having 1-12 carbon atoms, an alkenyl group having 3-12 carbon atoms, an alkynyl group having 3-12 carbon atoms, an alkoxy group having 1-12 carbon atoms, an alkenyloxy group having 3-12 carbon atoms, an alkynyloxy group having 3-12 carbon atoms, an alkoxyalkyl group having 2-16 carbon atoms, or an alkoxyalkenyl group having 3-16 carbon atoms; the methylene group in these alkyl group, alkenyl group and alkynyl group,

may be substituted with oxygen atom, sulfur atom, and silicon atom, and can be either linear or branched; Z1, Z2, and Z3 represent, each independently, -COO-, -OCO-, -OCH<sub>2</sub>-, -CH<sub>2</sub>O-, an alkylene group having 1-5 carbon atoms, an alkenylene group having 2-5 carbon atoms, an alkynylene group having 2-5 carbon atoms, or a single bond; and b, c and d are 0 or 1 each independently, and satisfy  $b+c+d \geq 1$ .

12. A liquid crystal display comprising a liquid crystal panel having a polarizing plate at least on the front surface side, the anisotropic scattering film described in any of Claims 1 to 11, a light guide, and a reflection plate or a diffuse reflection plate piled in this order, wherein the transmission axis of said liquid crystal panel and the transmission axis of said anisotropic scattering film are approximately parallel.

13. The liquid crystal display according to Claim 12 wherein the liquid crystal panel has a polarizing plate on the front surface side and the back surface side.

14. The liquid crystal display according to Claim 13 wherein the transmission axis of a polarizing plate on the back surface side of the liquid crystal panel and the transmission axis of the anisotropic scattering film are approximately parallel.

15. The liquid crystal display according to any of Claims 12 to 14 wherein a retardation plate is located between the anisotropic scattering film and the reflection plate or diffuse

reflection plate.

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